#include <stdio.h>

#include <string.h>

bool t[2010][2010];

int d[2010][2010][2];

int main()

{

freopen("input.txt", "r", stdin);

freopen("output.txt", "w", stdout);

int n, m, p, q, l, i, j;

scanf("%d%d", &n, &m);

for (i = 0; i < m; i++)

{

scanf("%d%d", &p, &q);

t[p-1][q-1] = t[p-1][q-1+n] = t[p-1+n][q-1] = t[p-1+n][q-1+n] =

t[q-1][p-1] = t[q-1+n][p-1] = t[q-1][p-1+n] = t[q-1+n][p-1+n] = 1;

}

for (i = 0; i < 2\*n; i++)

for (j = 0; j < 2\*n; j++)

d[i][j][0] = d[i][j][1] = -1;

for (i = 0; i < 2\*n; i++)

d[i][i][0] = d[i][i][1] = 2;

for (l = 1; l < n; l++)

for (i = 0; i+l <= 2\*n; i++)

{

j = i+l-1;

if (d[i][j][0] != -1)

{

if (i > 0 && t[i][i-1])

d[i-1][j][0] = i;

if (j+1 < 2\*n && t[i][j+1])

d[i][j+1][1] = i;

}

if (d[i][j][1] != -1)

{

if (i > 0 && t[j][i-1])

d[i-1][j][0] = j;

if (j+1 < 2\*n && t[j][j+1])

d[i][j+1][1] = j;

}

if (d[0][4][1] != -1)

i = i;

}

l = -1;

for (i = 0; i < n; i++)

{

if (d[i][i+n-1][0] != -1)

{

l = 0;

p = i;

q = i+n-1;

}

if (d[i][i+n-1][1] != -1)

{

l = 1;

p = i;

q = i+n-1;

}

if (l != -1)

{

while (p != q)

if (l == 0)

{

printf("%d\n", 1+p%n);

l = (d[p][q][0] != p+1);

p++;

}

else

{

printf("%d\n", 1+q%n);

l = (d[p][q][1] == q-1);

q--;

}

printf("%d\n", 1+p%n);

return 0;

}

}

printf("-1\n");

return 0;

}